

Hopewell Archeology:

The Newsletter of Hopewell Archeology in the Ohio River Valley

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1. Correlating Maps of the Hopewell Site, 1820-1993 By N'omi B. Greber, Ph.D. Curator of Archaeology Cleveland Museum of Natural History

Introduction

Eight maps, covering nearly two hundred years of research at the Hopewell site, were used to make a "best guess" reconstruction of the site as it was seen in 1800, just before human activities considerably accelerated erosion and other natural processes that altered the original Hopewellian landscape. Information from extant associated field notes, publications, museum curation records, modern aerial photographs, and limited ground survey provided additional data. Using both Geographic Information Systems (GIS) software and oldfashioned paper maps, correlations have been estimated among the maps.

The Site

The Hopewell site (33R027), the type site for the Hopewell culture, covers extensive areas of the second and third terraces above the active flood plain of the North Fork of Paint Creek. In 1800, more than three kilometers of earthen and stone walls formed a two-part enclosure: the Great Enclosure, encompassing more than 40 hectares, and the adjoining Square Enclosure, which could hold the entire Mound City monument with room to spare. Inside the Great Enclosure were two smaller enclosures: the D-Shaped Enclosure and the Circular Enclosure. At least 40 mounds were scattered within and outside the enclosures. They ranged in size from the largest constructed by any Hopewellian people to some of the smallest. Overall, the quality and quantity of cultural remains recovered from, and extant at, the site form the most striking representation of the Hopewell culture in eastern North America. Three major excavations at the site were separated by many decades: Ephraim G. Squier and Edwin H. Davis in 1845, Warren K. Moorehead in 1891 and 1892, and Henry C. Shetrone from 1922 to 1925. Six maps based on their findings have been used in this project.

There are at least seven obstacles associated with attempts to correlate specific mounds and other excavated areas as described and mapped by the three expeditions: (1) the lack of exact location data in extant field notes; (2) the use of the same number by a given excavator to refer to different mounds; (3) the lack of consistent changes in references if numbers are reused or reassigned; (4) possible misidentification by subsequent excavators of the location of previously excavated mounds; (5) ambiguities in field notes; (6) ambiguities in catalogs; and (7) loss of records. Despite these problems, it is possible to correlate published references, field notes, catalog entries, and often the specimens themselves for some recorded mounds. Research projects using such correlations have been published (e.g., Greber, Essenpreis, and Ruhl 1995; Greber and Ruhl 1989; Ruhl and Seeman 1998; Seeman and Greber 1991). Two additional maps were added to

those from the major excavations, the oldest by Caleb Atwater (1820) and the latest by James Marshall done in 1979.

Each map contributed information to the project's data base, albeit in varying degrees. A summary of the history and tenor of each map follows in chronological order of publication.

The Maps

The drawing in Atwater's map is crude, but two points have proven useful. First, the overall shape of the Great Enclosure is more realistic than it is in the later Squier and Davis volume. Second, six mounds are shown as a group south and east of the D-Shaped Enclosure, where the Squier and Davis published map shows only four. The accuracy of the map was not suitable for geographic registration, thus it could not be entered into a Geographic Information Systems file.

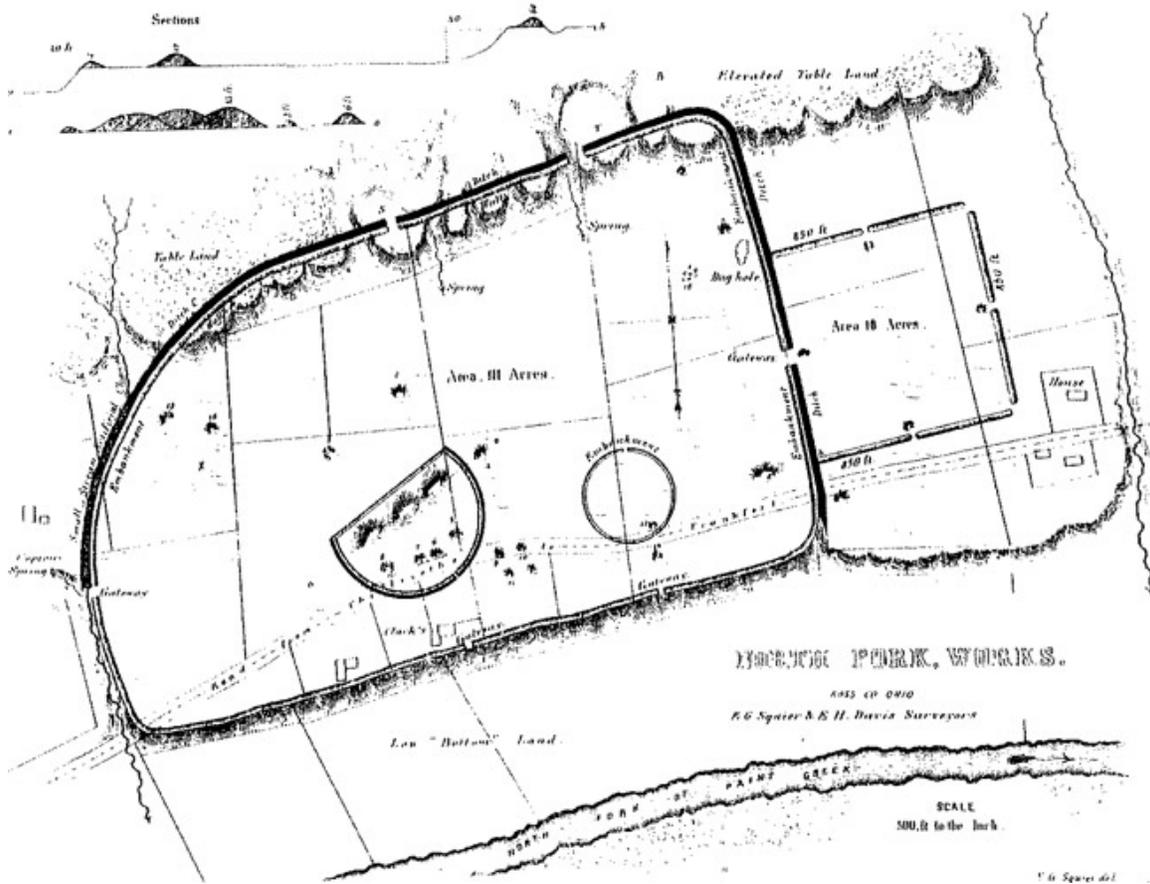


Figure 1. Map of the Hopewell site by Ephraim Squier and Edwin Davis (1848). The map is entitled "North Fork Works" and shows the D-Shaped and Circular Enclosures within the Great Enclosure, while the Square Enclosure adjoins the Great on the east. (Click on the image for a larger (40 KB) version.)

Two Squier and Davis maps have been used: the well-known plate from the *Ancient Monuments of the Mississippi Valley* (Figure 1 above) and a draft of this map recorded on a microfilm copy

of the Squier papers in the Library of Congress. The general shape of the embankment walls is the same in both maps. The mound numbering varies between the two maps, and a very important mound (Warren Moorehead Field Notes Mound 17) is on the manuscript map but was apparently missed on the final lithograph. The walls of the Great Enclosure on both maps do not match the shape seen on aerial photographs or on other earlier and later maps. The north-south distance is too short. I have not yet been able to find a coordinate transformation that would stretch the north-south distance and still maintain a reasonable east-west configuration. Thus, neither of the Squier and Davis maps could be geographically registered. They were used in three cut sections to make an estimated location "point map" for comparative purposes.

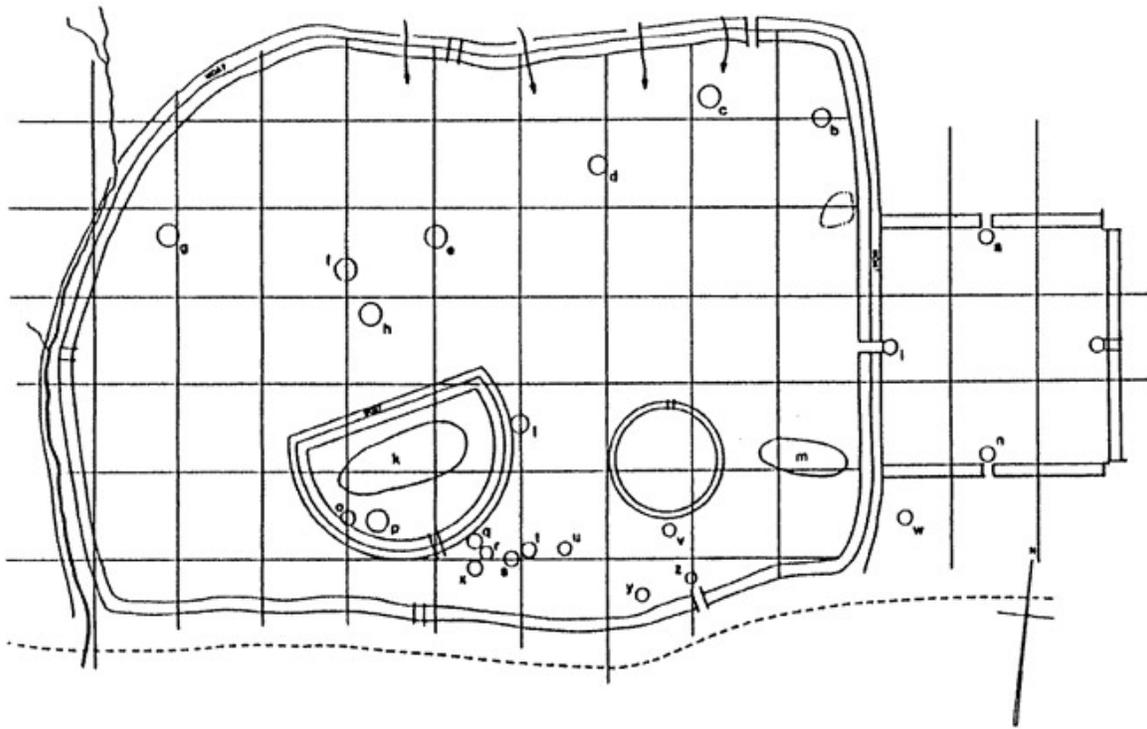


Figure 2. Drawing based on Clinton Cowen's 1892 map of the Hopewell site. This map provides a better approximation of the shape of the Great Enclosure and the locations of the six mounds immediately southeast of the D-Shaped Enclosure. NORTH FORK WORKS, Surveyed by C. Cowen in 1892. (Click on the image for a larger (28 KB) version.)

The map in Moorehead's 1922 report on his work in 1891 and 1892 also could not be geographically registered. In his report, Moorehead attributes the map to Clinton Cowen, but it has no apparent relationship to the Cowen map used for the present study (Figure 2). The Moorehead 1922 map appears to be based on the Squier and Davis 1848 map with some additional mound numbers and a few mounds added. The road through the southern portion of the site is shown as it was in 1848, not as it was in 1891 when both a straightened road and a parallel railroad track crossed the site. The shape of the Great Enclosure follows that shown on the Squier and Davis map. Additional problems in correlating field records, published records, and on-the-ground locations for this survey come from inconsistencies in mound numbering in the field notes and missing or poor descriptions of mound locations in the notes. Although the map could not be geographically registered, information from the 1891-1892 work was included in the study. Such information is essential for correlating records and artifacts across the Moorehead and Shetrone excavations.

Two Shetrone maps have been used: a map found in the archived field notes file and the map published in 1926. Some sections of the archived field map have been traced over in ink. It is likely that this map was made by the professional surveyor, F.R. Jones, listed on the published map. There are some differences between the maps. For example, two small mounds noted as being on the upper terrace are not on the field map but are on the published map as Mounds 36 and 37. Locations given in the field notes are not explicit enough to map them accurately. A major problem in compiling information was the confusion in mound numbering within the field notes. Shetrone changed mound numbers, but he did not always make consistent changes. This is similar to the problem one has in dealing with records from Shetrone's work at the Seip Group.

The map made in 1892 by surveyor Clinton Cowen, apparently as part of the documentation of the 1891-1892 Moorehead excavations, is curated at the Harvard Peabody Museum of Archaeology and Ethnology. It is large, torn, and fragile and cannot be directly scanned. A full-size copy was made for my files and was used for this project. The first publication of a simplified reproduction of the map is in Greber and Ruhl (1989:Fig. 2.1), a version of which appears above as Figure 2. The map's format is the same as that used for other projects directed by Frederick Putnam; that is, walls and mounds are stylized and features such as fences and roads are not entered onto the map.

The differences in diameters of the mounds appear to be deliberate. We found that, overall, the sizes by general class match those recorded by other workers at the site. The work of James Marshall has been an essential part of this project. Marshall, a civil engineer, has used his professional skills for many years to map prehistoric enclosures found in eastern North America (e.g., Marshall 1979). Over these years he has graciously shared information with archeologists and others. The Hopewell site map he made available for this project combines his on-the-ground survey points with his study of archived aerial photographs. Marshall also supplied additional on-the-ground reference points that aided in making reasonable geographic registration of other maps.

READING THE MAPS

Two techniques were used to obtain data from the maps. One centered on computer images and software manipulations using Environmental Systems Research Institute GIS programs; the other centered on hand measurements made on paper maps. This dual approach allowed some integration of data of varying accuracy and also some cross checking of results. Both methods were checked against aerial photographs and limited available modern ground survey. Aerial photographs can, when photographic conditions are appropriate, show landscape features visible in 1800 that are no longer visible at ground level.



Figure 3. The Shetrone field map of the early 1920s. It proved suitable for geographic registration and served as a base map for part of this study. The Shetrone map shows mounds on the upper terrace and conveys a sense of the topography. (Click on the image for a larger (44 KB) version.)

The computer work began as usual by transferring scanned copies of maps into GIS files. "Layering" then placed in separate files mounds, wall segments, and other natural and built features appropriate for each map. The hand measurements were made on copies of maps that had been photographically adjusted to the same scale using the various original map scales. Using a light table, each map was matched to the Marshall map, and the grid was then transferred. The matching was a "best visual estimate," heavily weighting extensive features that have been visible to all field workers, the northern and eastern walls of the Great Enclosure. Information from both approaches is available on-screen for interactive use on a need-to-know basis. Because of the technical difficulties encountered using computer software to register antique maps, I was pleased that, in general, the locations measured by hand and those read by software from a computer image matched fairly well. For mounds actually seen in the field by a given researcher and apparently mapped with reasonable accuracy, the majority of the locations overlap within the recorded mound size. The differences tend to be less for readings from the Cowen and Marshall maps. This is at least partly due to the differences in drawing style. It is easier, particularly on the computer screen, to determine "mound centers" for line drawings than for the more realistic style of the Shetrone map (Figures 3 and 4). However, even this overlap cannot always determine a match among field, research, and museum records of a particular ground location (usually labeled as a mound). Thus, I still prefer to attach a prefix to identify the excavator when noting, for example, that Moorehead Mound 17 is clearly not the same mound as Shetrone Mound 17. I also

have concluded that the mound labeled "[../index.html](#)" on Moorehead's published map does not indicate the location of this mound, nor does the location that Shetrone provides on his published map. Rather, the best approximation to the original location is apparently found on the Squier and Davis manuscript map and on the Cowen map.

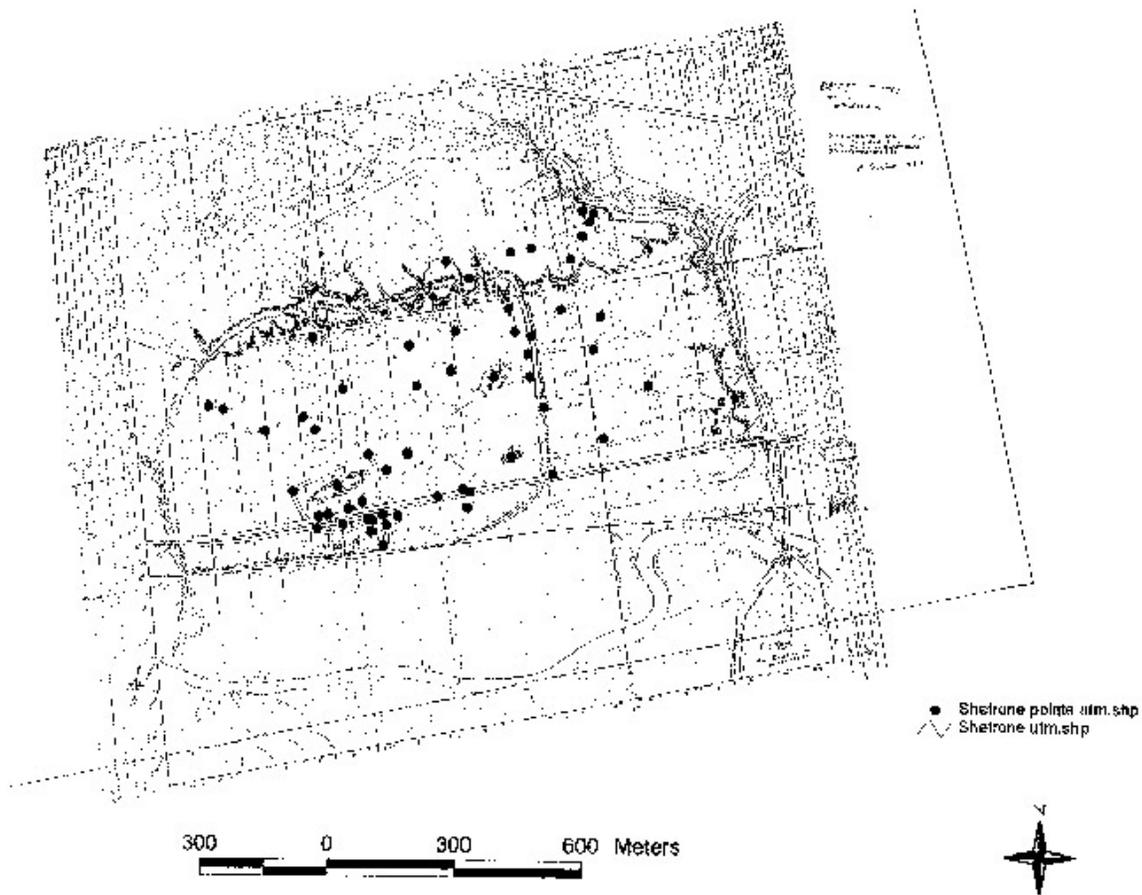


Figure 4. Geo-referenced Shetrone map showing points attached to the Location Data Base File developed during this map correlation project. (Click on the image for a larger (44 KB) version.)

Conclusions

The present project has formally organized data that may aid in finding a path through the maze of number jumble that has accumulated over many decades in descriptions of the Hopewell site. "New" data that might clarify matters can appear from private or museum archive sources, as did the Cowen map, but the best additional data will come from modern ground surveys. It is hoped that the recently organized data will aid in planning cultural resource protection and future research projects that will enhance the public appreciation of the remarkable legacy left by the ancient builders of the Hopewell site.

Acknowledgments

I thank the Eastern National Park and Monuments Association; the Kirtlandia Society of the Cleveland Museum of Natural History; Hopewell Culture National Historical Park; the GIS Office, Cuyahoga Valley National Recreation Area; the Department of Anthropology, Kent State University; and the Department of Geography, University of Akron, for support. I extend special thanks to those who worked on the project: Michael DiPaolo, Anthony Gireau, Bret Ruby, John Yaist, and as we came to the end, Jennifer Pederson. As always, I acknowledge personal thanks to those who care for and graciously give access to the collections that form the basis for all Hopewell research. References

Atwater, Caleb

1820 Description of the Antiquities Discovered in Ohio and Other Western States. *Archaeologia Americana* I:105-267. Greber, N'omi B.

1995 The 1993 Field Season at the Hopewell Site, Ross County, Ohio. Report to the Archaeological Conservancy, Inc., Santa Fe, New Mexico. Submitted by N'omi Greber and Mark Seeman.

Greber, N'omi B., Patricia Essenpreis, and Katharine C. Ruhl

1995 The Hopewell Site: Realm of Hopewellian Artisans and Architects. On CD, *The Hopewell Mound Group: Its People and Their Legacy*. Presented by the Ohio Historical Society.

Greber, N'omi B., and Katharine C. Ruhl

1989 *The Hopewell Site: A Contemporary Analysis Based on the Work of Charles C. Willoughby*. West View Press, Boulder.

Marshall, James A.

1978 American Indian Geometry. *Ohio Archeologist* 28(1):29-33.

Moorehead, Warren K.

1896 The Hopewell Find. *American Antiquarian* 18:58-62.

1922 The Hopewell Mound Group of Ohio. *Field Museum of Natural History Anthropological Series* 6:73-184.

Moorehead, Warren K., Hilborne T. Cresson, and Clinton Cowen

1891-1892 Field notes from excavations at the Hopewell Mounds, Anderson, Ross County, Ohio. On file, Department of Anthropology, Field Museum of Natural History.

Ruhl, Katharine C., and Mark F. Seeman

1998 The Temporal and Social Implications of Ohio Hopewell Copper Ear Spool Design. *American Antiquity* 63(4): 651-678.

Seeman, Mark F.

1981 An Archaeological Survey of the Hopewell Site (33Ro27) and Vicinity. Submitted to the Ohio Historic Preservation Office, Columbus.

Seeman, Mark, and N'omi Greber

1991 Flames of Reverence: Variations in the Use of Prepared Clay Basins Within Ohio Hopewell. Midwest Archaeological Conference, LaCrosse, Wisconsin.

Shetrone, Henry C.

1922-1925. Field notes from excavations in the Hopewell Group. On file, Ohio Historical Society, Columbus.

1926 Exploration of the Hopewell Group of Prehistoric Earthworks. Ohio Archaeological and Historical Quarterly 35:5-227.

Squier, George E.

The Papers of Ephraim Squier. Microfilm (Series IV Vol. 9, Shelf No: DM15, 116, Reel No: 12 of 14). On file, The Library of Congress, Washington, D.C.

Squier, E. G., and E. H. Davis

1848 Ancient Monuments of the Mississippi Valley. Smithsonian Contributions to Knowledge No. 1. Washington, D.C.

2. Book Review By John E. Kelly

Staging Ritual: Hopewell Ceremonialism at the Mound House Site, Greene County, Illinois; by Jane E. Buikstra, Douglas K. Charles, and Gordon F. M. Rakita. Kampsville Studies in Archeology and History No. 1. Center for American Archeology Press, Kampsville, Illinois. 216 pages, 60 illustrations, 1998.

Archeology of the Middle Woodland Mound House site is presented within a broad context using an interpretative framework that derives its models from traditional, small-scale societies, where notes of "the sacred" are pervasive rather than circumscribed. Interdisciplinary studies are used to strengthen interpretations, and newly discovered complexities in the structure of the site are explored here along with data from other Illinois Valley mortuary sites.

3. Notes on Research at Goodall, 1998 Mark Schurr University of Notre Dame

For the past three years, the University of Notre Dame archeology field school has conducted geophysical surveys and excavations at the Goodall site in northwestern Indiana. The Goodall

tradition, a northwestern extension of Havana Hopewell, was one of the first archeological cultures defined in Indiana.

The Goodall site has been central to archeological ideas about Hopewell in northwestern Indiana and southwestern Michigan. However, most of what we know about the site comes from amateur excavations conducted in the nineteenth century, so the site remains poorly known by modern standards.

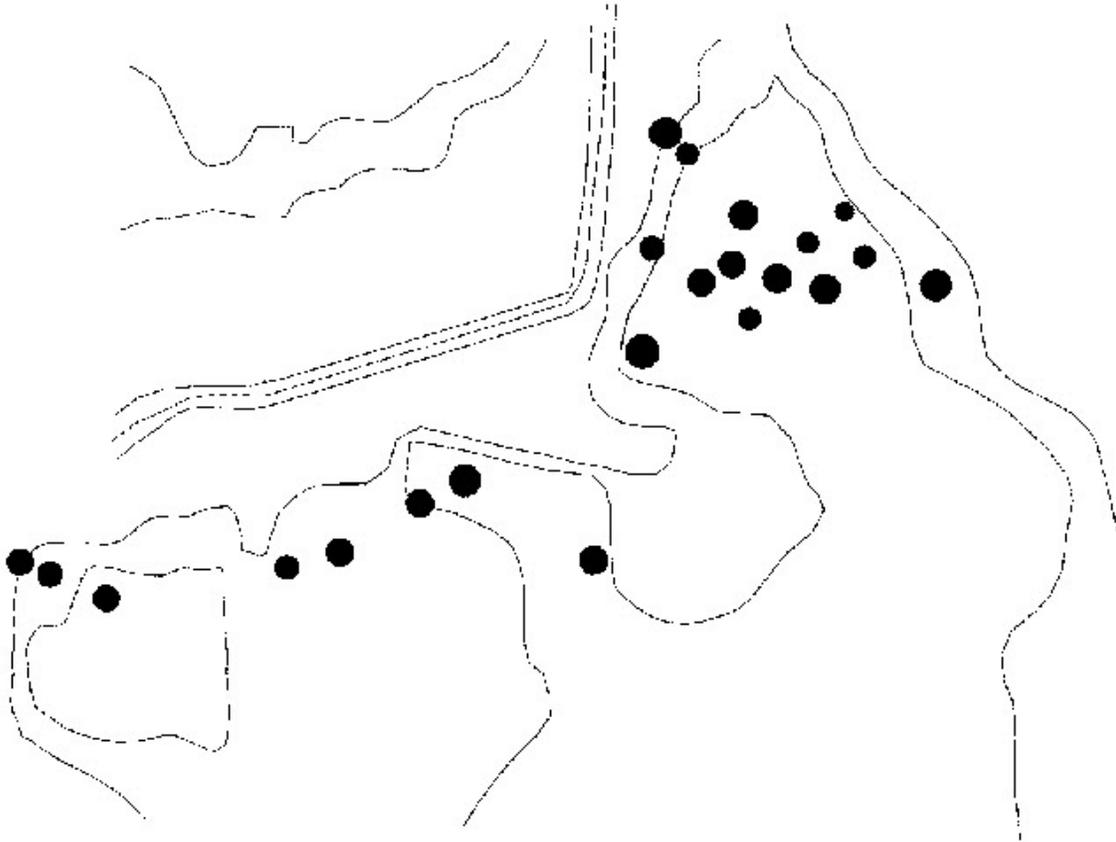


Figure 5. A reconstruction of the original distribution of mounds at the Goodall site based on Bill Mangold's interpretation of Ernest Young's maps. (Click on the image for a larger (11 KB) version.)

Even the number of mounds once present at the site (22) was uncertain until Bill Mangold, Indiana Division of Natural Resources, found a "lost map" of the site in the Ernest W. Young Collection at the Illinois State Museum (Figure 5). Young was an amateur archeologist who regularly collected at the Goodall site during the mid-20th century. The Young collections are now on loan to Notre Dame, where they are being studied in depth by Mark Schurr and Bill Mangold.

The field investigations have shown that even a site that appears to have been destroyed by years of looting, grading, and cultivation can still provide new archeological data when approached with modern techniques.



Figure 6. Classic Havana Hopewell ware sherds from the Goodall site. (Click on the image for a larger (58 KB) version.)

So far, the Notre Dame field investigations at the Goodall site and Bill Mangold's surface surveys have defined several habitation areas surrounding the mound group. They have also revealed that one of the mounds was probably constructed between AD 1 and AD 150, when Havana Hopewell was in its most complex and elaborate expression. The Hopewell ware sherds in (Figure 6) from disturbed contexts in the mound were probably produced at that time.

Leslie Bush, Indiana University, has identified a single, well-preserved bottle gourd seed from the Goodall site, which is the first documentation of a domesticated plant from a Middle Woodland context in northwestern Indiana. Further investigations at the Goodall site in the coming year will attempt to refine the use of geophysical surveys through a large-scale magnetic and soil resistivity survey of several of the former mound locations.

4. Announcement.

Dr. Bret Ruby has accepted a position with the U. S. Army at Fort Bliss, Texas. Look for additional information in the next issue of this publication.